

**Homework #2** — PHYS 603 — Spring 2008  
Deadline: **Tuesday, February 19, 2008, in class**

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Textbook: Silvio Salinas, *Introduction to Statistical Physics*  
Springer, 2001, ISBN 0-387-95119-9

**Do not forget to write your name and the homework number!**

Each problem is worth 10 points.

## Ch. 2 Statistical Description of a Physical System

### 1. Problem 2.4, Ergodic theory for a 1D oscillator.

In this problem,  $E$  denotes the energy of one oscillator (which is a member of an ensemble of oscillators).

### 2. Problem 2.5, Phase space for $N$ oscillators.

In this problem,  $E$  denotes the total energy of  $N$  oscillators.

Do not pay attention to the discussion of how specific heat changes with temperature. We have not introduced these concepts yet. Just calculate the volume of the phase space.

### 3. Problem 2.6, Spin chain with energy $S_j^2$ .

### 4. Problem 2.7, Lattice gas.

*February 18, 2008*